An evaluator-independent substitute for anaerobic threshold(AT)

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OBJECTIVE AT is often employed as a measure of exercise tolerance. It, however, is visually determined on the graph and evaluator-dependent. The point where the v-slope (VO_2 vs VCO_2 relation) intersects the line of respiratory exchange ratio (R) of 1 is evaluator-independent. Yet this point may be greatly influenced by tissue CO2 storage effect(CS) in a non-steady state exercise such as the ramp protocol. We hypothesized that by employing a steady state (SS) exercise protocol and using only SS values R1P will be determined free of CS.
METHODS Eleven healthy subjects, 6 males and 5 females(mean age, 34(SD±6.8) each underwent two symptom-limited maximal exercise, one using 25 watt/min ramp (R-Ex) and the other 3-minute step protocol(S-Ex). The five 3-minute stages were chosen based on R-Ex. The average of the last 1 minute values of VO_2 and VCO_2 at each stage were obtained. CS was mostly over by 2 minute and SS then ensued. These points were plotted @as the v-slope. The line crossing the R=1 was mathematically calculated and termed the R1 point (R1P). AT was determined using R-Ex values. The peak VO_2, AT and R1P were all expressed in ml/min/kg.
RESULTS The peak VO_2, AT(R-Ex), and R1P(S-Ex) were 34.8, 17.8 and 21.8, respectively. AT was 44.6% and R1P, 21.8% of the peak VO_2. The HR(b/min) at peak Ex, AT and R1P were 173, 118 and 128, respectively. R1P correlated well with AT (r=0.88).
DISCUSSION & CONCLUSION The point where the v-slope intersects the line of respiratory exchange ratio of 1 is entirely determined mathematically, evaluator-independent, and may be substituted for AT.
KEY WORDS anaerobic threshold(AT), R1P(VO_2 at respiratory exchange ratio of 1)

Assessment of heart rate in infants from 6 to 36 months old during aquatic activities

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OBJECTIVE In the last few years the aquatic activities for babies have been growing. The advantages for the baby can not be only established in the relational level, considering that the baby is able to learn and to carry out several aquatic motor skills. The aim of this study was to analyze cardiologic aspects, characterizing the heart rate behaviour in babies from six to thirty-six months old participating in aquatic activities.
METHODS The sample was fourteen babies of both genders, accompanied by their parents. The babies used a heart rate monitor Polar®, model S610i (non invasive method) and a receptor clock was put in the parents' wrist, which was synchronized with the filming during the aquatic activities session. The results are presented in heart rate average and standard deviation for each task defined: immersions, jumps, ventral displacements, dorsal displacements, displacements with support material, autonomous displacements.
RESULTS The results pointed out that the heart rate values were very similar during all the tasks performed by the babies and they were much closed to the value of the heart rate of the beginning of the session.
DISCUSSION & CONCLUSION The obtained results revealed acceptable and sustained standard deviation values to consider this method viable for a heart rate assessment in babies participating in aquatic activities. This method can be useful in several cardiac studies, by observing the heart rate behaviour in a baby and controlling the load that they are submitted to. With this approach, we expect to contribute to the evolution and development of the aquatic activities for babies.
KEY WORDS Heart rate, Aquatic activities, Infants